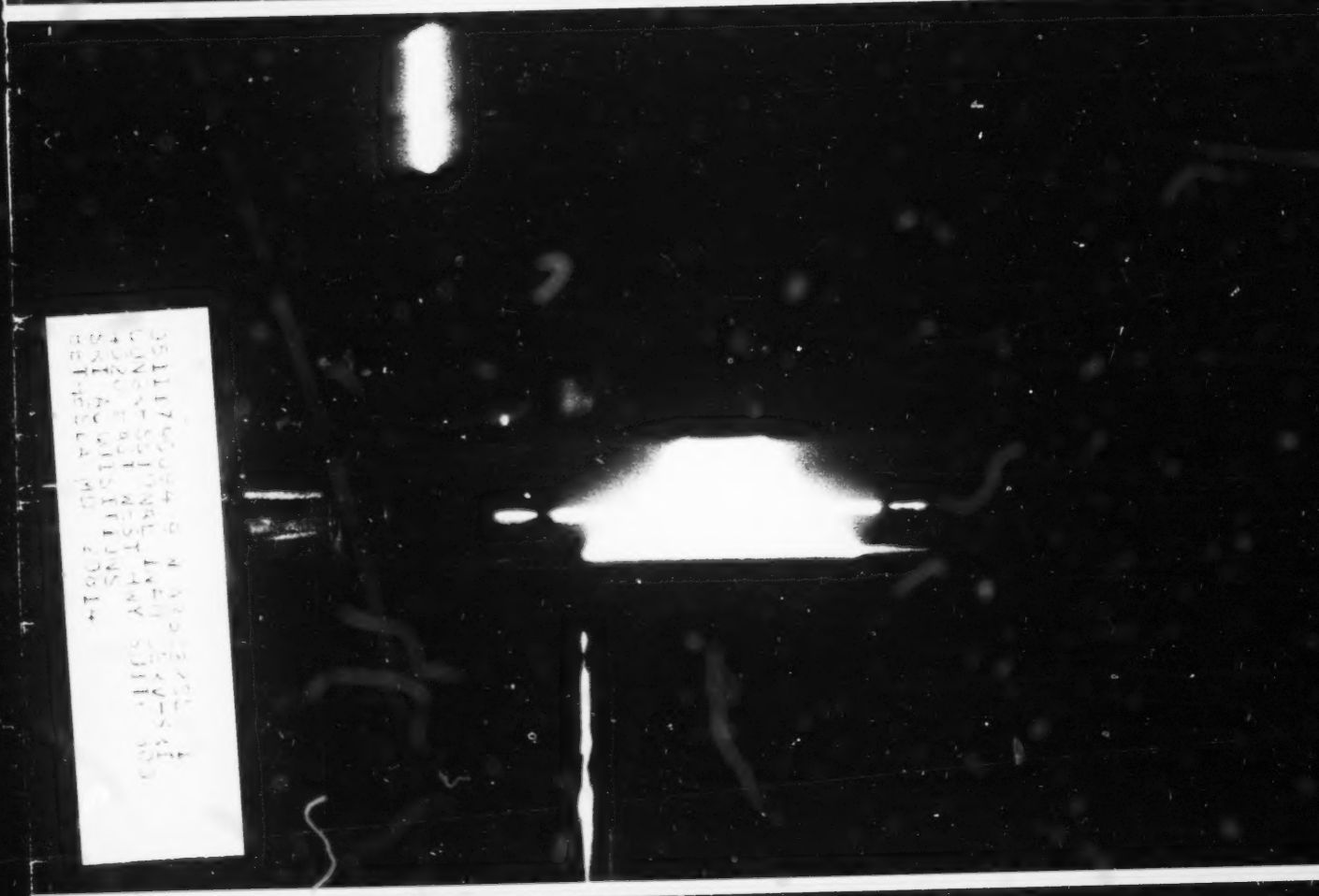
AUGUST 6, 1984
CHEMICAL & ENGINEERING
NEWS

PRELIMINARY PROGRAM
1984 International Chemical Congress of Pacific Basin Societies—Honolulu Page 35



Flame-Generated Fine Particles

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News of the Week

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Cover: Laser beam is used to measure size of flame-synthesized particles at the University of New Hampshire

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World Bank May Eliminate Its Technology Advisory Function

Budget cuts and economy in developing countries force bank to reorder its priorities, and critics say technology it supports hasn't delivered

Wil Lepkowski, C&EN Washington

Policy advice on science and technology over the years has become a fully accepted way of helping institutions save money and provide for the common good. The White House has its Office of Science & Technology Policy, Congress its Office of Technology Assessment, and even governors and state legislatures their science advisory staffs. All know that technical knowledge drives economies and that sage advice on it can head off technological boondoggles.

So it seems a little peculiar that the biggest technical assistance organization in the world, the International Bank for Reconstruction & Development (commonly known as the World Bank) is thinking of eliminating its own small technology advisory function.

It hasn't yet and in the end may not, but the bank, under its president A. W. Clausen, who in 1981 succeeded Robert McNamara, is in the process of reordering its priorities and strategies. The bank faces pressures from worsening economic conditions in the developing countries and a tightening administrative budget at its headquarters in Washington, D.C.

The science and technology overview function is headed by Charles Weiss Jr., a former biochemist who came to the bank in 1971 as McNamara's science adviser. Under McNamara, Weiss was able to build up a team of eight full-time professionals. But when McNamara retired and Clausen settled in, Weiss' office was merged into the new, but isolated, Office of Environmental & Scientific Affairs, headed by James A. Lee.

Clausen: an interdependent world

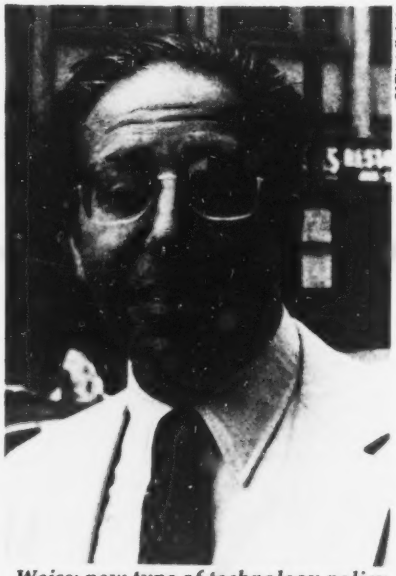
Weiss is trying to save the technological overview function against bank budget cutters, convinced that good technological advice can enhance the effectiveness of the bank's programs around the world. At the same time he believes the work of technical advice at the bank is woefully unknown to the science policy community. "I feel strongly that science and technology assessment is an important function of the bank, and that it should be saved, whoever runs it," Weiss says.

The scientific community, Weiss believes, could learn a lot from the way the bank goes about financing science and technology. "In the hands of the bank," he says, "the development assistance loan has become a flexible instrument for the promotion of scientific and technological development. This may come as a surprise to scientists and technologists who are accustomed to grant financing. At the same time, the willingness of governments to borrow for projects that support science and technology shows the importance they attach to this aspect of development."

And since technology is now so pervasive an element in world development, says Weiss, "it may well be that we are witnessing the beginnings of a new type of technology policy based on financial institutions, unlike our current technology policies that for the most part are based on research institutions."

All that may well be, but to most of the economically oriented staff at the bank, technological advice performed from the apex of the administrative triangle needs a lot of selling. The bank already employs 600 to 700 technically trained men and women, all there to advise on every field from health care to satellite technology. Most of the bank's brigades of economists think they are enough. But that isn't what Weiss' work involves. His function provides overview, or assessment of relationships between technology and everything else that's relevant to its optimal use. So Weiss faces the problem of boosting the bank's work while reminding it of its deficiencies.

To outsiders, the bank hardly projects the image of a major technological agency. It is seen as first a development agency, then a bank. But in fact, most of the money it lends ($15 billion last fiscal year) goes into technological projects—industries, farms, mines—that enable the assisted country to become an exporter and thus enjoy a viable


C&EN staff photo

Weiss: new type of technology policy

economy. World Bank success stories include South Korea, Taiwan, Singapore, and, in certain respects, though crushed by huge debts, Brazil and Mexico. Each country has created an industrialized economy with products that are competitive in export markets.

But to the bank's critics, the technology it supports hasn't really delivered. Poverty is more grinding than ever. The "Third World" remains a pretty miserable place. It is torn by revolution and savaged by debt, owing western financial institutions at least $600 billion, with little prospect of ever repaying the principal or even the interest.

Most developing countries cannot hope to become a Taiwan or a Korea. The markets just aren't there. Attempts to develop them for rice and electronics in the Philippines, for example, failed totally.

Thus, for 40 years, western science and technology have promised joy and prosperity to the world's downtrodden, and the results have been somewhat less than desirable. Moreover, critics say, much of the industrial technology devised by the bank's economic planners was selected not to employ as many people as possible but to reduce the human workforce for the sake of export-enhancing efficiency and productivity along the model of countries already industrialized.

"This cycle has dreadful political effects," says Princeton University political science professor Richard Falk. "The export compulsion capitalizes agriculture at the expense of marginal peasants and domestic demand, while the investment compulsion both depresses real wages and represses the efforts of workers to resist."

Says Cheryl Payer in her book, "The World Bank—A Critical Analysis," published in 1982: "Only regular, decently paid employment can be the solution to poverty. While the bank has announced a few token projects for creating employment, it has more typically exerted its influence to keep wage levels low in order to encourage foreign investment and export enterprises."

Comments development expert Lester Brown, director of the Washington D.C.-based Worldwatch Institute, "We need to counteract the purely economic assessment of projects. For example, in the Philippines it makes no sense to be pushing nuclear power, which is so capital-intensive. It may make more sense to go the biomass route where land surplus is used to grow trees that can fuel small 3-MW power plants and in the process employ thousands of people. That kind of approach did not exist a few years ago. It takes capability in technology policy to see things the specialists often can't see."

The bank had nothing to do with nuclear power development in the Philippines and Weiss' shop has documented as well as assisted development of small-scale, labor-intensive technologies around the developing world. But enough experts have studied the bank that their criticisms are being heard.

Another point for bank criticism has been its waffling position on population control. In the bank's 1984 World Development Report, just issued, Clausen tries to make the link between new economic realities and world population growth. "The general public remains insufficiently aware of the growing links among nations over the past few decades," he says, "and of the extent today of international economic interdependence. In an increasingly interdependent world, low growth, fiscal and labor market problems, and resulting inflation in industrial countries have taken a heavy toll in developing countries.

"Exports have suffered," he says, "fear of protectionism has increased, and high real interest rates have made debt servicing a costly burden. If the industrial countries fail to regain the growth rates they managed in the 1950s and 1960s, many countries in the developing world will have great difficulty making progress in the years ahead."

With the outlook so grave, it would seem that Clausen might value an office that would give him some criteria for assessing those technologies that help, and those that detract from, balanced development of a region. It is now acknowledged, for example, that contraceptive devices and birth control pills, promoted through bank projects, have had little impact on controlling population in developing countries. But in his report, Clausen says little about new sets of policies and perceptions the bank will pursue to tackle the problem effectively.

"The World Bank's efforts in the population field," declares population consultant Peter Huessy, who has just completed a lengthy study of the problem for Population Reports International of Washington, D.C., "have been limited, uncreative, without substantial impact, and of

Agriculture gets biggest share of World Bank loans

$ Millions, fiscal 1983	Loan amount	% of total loans
Agriculture and rural development	$ 3,698	25.5%
Energy	2,838	19.5
Transportation	1,924	13.3
Development finance companies	1,238	8.6
Water supply and sewage	811	5.6
Industry	692	4.8
Urban development	554	3.8
Education	548	3.8
Small-scale enterprises	531	3.7
Population, health, and nutrition	118	0.8
Telecommunications	57	0.4
Technical assistance	53	0.4
Nonprojects (general assistance)	1,438	9.9
TOTAL	$14,477	100%

Source: World Bank

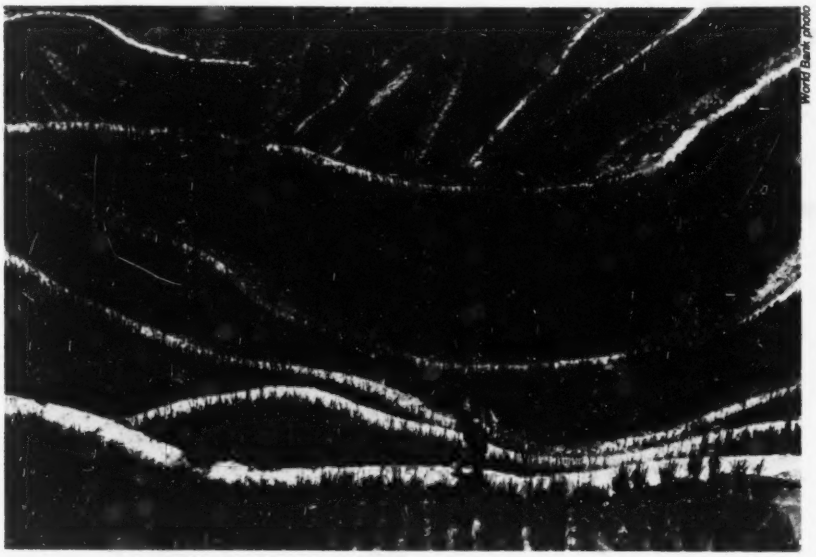
little institutional priority. The bank has not urged governments to institute policies to encourage couples to have smaller families, a prerequisite of substantial reductions in population growth." Huessy refers to such practices as guaranteeing housing and farm acreage to couples who limit to two the number of children they have.

The World Bank, being such a large target, is easy to knock. And no one can argue that its projects in irrigation, telecommunications, farm productivity, roads, railroads, ports, health care, and forestry preservation have failed. It's just that new approaches are needed to reach the poorest. Better choices of technology are at least part of the answer, and this is where Weiss' operation comes in.

"There are lots of dimensions to development," Weiss points out. "The thought processes of economists, plus sociologists, plus technologists, plus agriculturalists are all involved. And all should be in touch with each other and understand what each other has to contribute." His office, in fact, runs a training program set up along those lines "to help people think about development from a common frame of reference," he says. "This dimension of development does not receive enough attention. Each of us will see issues the other did not pick up."

Weiss knows both high and low technology and has become convinced over the years that high tech is very rarely the answer to solving problems at the village level. For example, a study on agricultural mechanization in India done in another part of the bank showed that tractors didn't raise the intensity of cultivation but actually led to the eviction of sharecroppers. The tractors, to justify their worth, forced expansion of farms and led to the uprooting of sharecropper households. So rather than providing jobs for the poorest—something the bank purports to want to do—it actually reduced employment. The final solution was animal-driven plows and simple toolbar carriers "as the improved implement offering the greatest potential benefit."

Weiss' case for keeping a technology advisory position at the bank is a compelling one, but perhaps waiting for its proper political time to come. Robert F. Wasserstrom, a senior associate at the World Resources Institute in Washington, D.C., has worked at the bank as an environmental consultant and currently is studying the institution's policies over the years. He says there's no doubt that balanced technological input is needed in the bank, but that there are sets of mind that work against it.



World Bank photo

Rice is planted on terraces in the Philippines

"I have to keep reminding myself," he says, "that the bank is still a bank. Its project officers have to see each project in terms of its ability to pay for itself, that is, to be successful enough so that the loan will be paid off. That's all bankers are interested in: whether the criteria for, say, a road are met and that the loan will be repaid, not necessarily that the technology is the most appropriate kind.

"You can use either set of criteria to evaluate a project. And it's true that if you ask whether any given project got down to helping the poor, in most cases you'd find bank projects wanting. One thing I find about the bank is that the whole process is so disarticulated. For example, performance evaluation and financial monitoring are not tied together. And of course, technological advice across the board is not brought in at all. That's why a function like technology policy doesn't really fit at the World Bank. That kind of advice tends to hold things up when someone like Chuck [Weiss] says there might be a better way to do something."

Strangely, the National Academy of Sciences has seen little reason to interject itself in the principle that the World Bank could use a strong technology assessment component. "I thought the elimination of Chuck's job already had happened," says Victor Rabinowitch, head of the academy's office of international affairs. "The science community isn't upset" over the possible elimination of the bank's technology assessment office, he says, "because the World Bank's science program was never very visible. Lots of us think that the World Bank's contribution to the development of science and technology in the developing countries is enormous. But its program hasn't involved the American scientific community in any significant way."

So it is questionable whether the cool logic inherent to science and technology can steer the bank toward policies that actually do ensure a more direct tie-in between know-how and poverty. In other words, whether the Chuck Weisses of the world can exert enough influence to help direct a revolution in finance and technology to help developing countries get out of the mess they're in. □